

Science Explains Why the Cat Comes Back

The Cat Came Back

But the cat came back,
 Couldn't stay no longer;
 Yes, the cat came back
 The very next day;
 The cat came back,
 Thought he was a goner,
 But the cat came back,
 For it wouldn't stay away.

—From the old-time popular song,
 "The Cat Came Back."

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A Mysterious Sense in Every Muscle Like an Invisible Rubber Band Pulling It Back Home, Explains Professor Herrick



The Figure at Left Shows How the "Invisible Rubber Bands" Stretch from the Cat's Muscles and Unerringly Draw It Back to Home, Which Is the Focusing Point of This Mysterious Muscular Sense.

(1) In Diagram Shows Prof. Herrick Starting Away with the Cat from Its Home; (2) as He Way; (3) Turning Toward the Woods; (4) Entering the Woods; (5) Releasing the Cat; (6) The Point from Which It Unerringly Made Its Way Home.

Head of a Tiger. The Cat Inherits Its Homing Faculty from These Wild Felines of the Jungle, Science Finds. But the Whiskers, It Is Now Certain, Have Nothing to Do With That Power.

Professor C. F. Hodge relates that he and his friends took a large tomcat with them in a boat on a lake at Madison, Wis. The cat became restless and anxious to go home. He would climb out on one end of the boat and stretching his head toward home moved almost continuously. Hodge and his friends then amused themselves by turning the boat slowly round and round, first one way and then another, to see if they could throw the cat off its bearings, but without doing so. "Whether right side, left side, bow or stern," says Hodge, "Tom was always on the part of the boat nearest home and straining as far as he could in that direction. Fully a mile from any shore, how could it tell which shore was which?"

A few lights were visible on the shore and none of the party was able to distinguish the cat in a woolen blanket and held it on the lap first and then on the bottom of the boat, while it was turned round and round as before. Whenever released the cat started with never a mistake and without the slightest hesitation toward the end of the boat nearest home. Whether the boat was turned by a single stroke as on a pivot, or rowed slowly around in a circle, the result was always the same.

Members of the party were blindfolded and were required to guess whether the boat was turned or allowed to stand still, or was going in a straight line or circle.

It was an even chance whether they guessed right or wrong. The tomcat kept his bearings better than any of them.

Hodge was inclined to believe that the cat's sense of direction was due to its ability to detect sounds on the shore which were too faint for the human ear, but this has not been supported by subsequent investigation.

From his own experiments Professor Herrick concludes: (1) That the homing power of a cat is independent of the senses of vision, hearing and smell; (2) that the cat did not return, as a dog would, over the course taken on the way out; (3) that under the conditions described the cat was able to arrive home at night, and probably does so by preference; (4) that its power to return is not affected by turning it around or by any ordinary treatment, barring possibly anaesthetization.

It is, of course, established that other animals have the homing ability, and that this is carried to an extraordinary development in the birds. Professors Watson and Lashley have shown that terns, when taken from their nests on Bird Key, Tortugas, Florida, made home upward of 800 miles away. The scientists found that they could not have made their way by any land marks visible to the human eye and that they had no special mechanism in the nose which could assist them, but they thought that the birds might "possess on certain parts of the body (eyelids, ear covering or oral cavity) sensitive tactual and thermal mechanisms which may assist them in reacting to slight differences in pressure, temperature and humidity of air columns."

Professor Herrick reasons that the cat could not have found its way home by sense of smell because it did not follow the track by which it was taken out. Moreover, it does not possess a remarkably acute sense of smell. It did not find its way back by sight, because it travelled preferably by night, when it could see scarcely anything, even allowing for the superior vision of the cat in the dark. There is no reason to believe that there were any sounds which could have guided it at a distance of three or four miles from home.

By the process of exclusion, Professor Herrick says he is inclined to believe that the secret of the cat's remarkable homing power lies in the "kinesthetic sense," which is older by far than either seeing, smelling or hearing, and by which compensatory movements of the body can be made and maintained. In other words, the power lies back of the ordinary sound organs and is in some way bound up with the primitive muscle sense which experiment has already shown to be of far greater delicacy in many animals than any man.

It is, of course, a cruel thing to take a cat out and try to lose it. But everyone who has ever tried to do it knows just about how nearly impossible it is. In most cases the cat gets back long before the irritated owner. At any rate, it is bound to turn up sooner or later.

This curious faculty of the cat in finding its way back home over miles of unfamiliar country has even been embalmed in one of the most famous popular songs, one of whose choruses is quoted on this page.

The problem of why "the cat comes back" has been taken up at last by science. Professor Francis H. Herrick, of the Western Reserve University, is one of those greatly impressed by the cat's peculiar ability; and as he found no adequate scientific explanation for it in text books he determined to throw what light he could on the subject by personal experiment.

As a result of a series of such experiments, Professor Herrick has come to the conclusion that neither seeing, smelling nor hearing enables the cat "to come back."

Instead of any of these senses, the cat's inevitable return to its home is due to a strange and mysterious power of memory in its muscles. Professor Herrick calls this a "kinesthetic sense"—that is, a sense of muscular movement which man does not now possess, but which probably also explains the homing power of pigeons and the tiger. The tiger, of course, belongs to the same family as the cat.

Through this "kinesthetic sense" a cat, when it is carried away from its home, records involuntarily in all its muscles every twist and turn of its journey in relation to the direction in which its home lies.

Put very simply, it is as though within the muscles of the cat there is a compass whose needle steadily points homeward, no matter how many twists and turns the animal undergoes in its journey away.

Or, as Professor Herrick puts it, it is as though the cat had rubber strings of unlimited elasticity stretching out from its muscles and attaching it to its home. The further away the cat is carried the harder the invisible strings pull, and as soon as the animal is released it follows the pull of the strings in a straight line until it reaches home, when, of course, the pull ceases.

With such an invisible elastic link of unlimited stretchability, it will be seen that it makes no difference to the cat whether it is put in a bag and carried around by devious routes miles and miles away. The invisible rubber-bands upon release immediately pull its head in the direction of home, keep it there, and back comes the cat.

Professor Herrick's interesting experiments are described by him in the Scientific Monthly.

The first cat experimented upon had

been born in a barn on the professor's homestead, and it learned as a kitten to enter the house through a glass door. It became a favorite house cat, but at the age of fifteen months it proved such a bird hunter that the professor's family decided to get rid of it, and he made the experiments on it as a way of losing it.

In the first experiment the cat was carried in a gunny sack over a rocky course, mainly by electric car, down a series of hills to a point on the University Campus in Cleveland, 4.6 measured miles from its home in Cleveland Heights.

There it was given a dish of milk and the liberty of two rooms, in one of which the window was slightly lowered at the top. That was on a Monday morning, and at 5 o'clock in the evening it was still in its new quarters. Wednesday morning, about forty hours later, the cat suddenly appeared on the back porch of the professor's house and gave its usual signal to be admitted.

In order to reach home the cat had traversed an unknown country consisting of city and suburban streets, across the grading of a belt line railroad, probably by a bridge, and ascended a series of terraces to a height of 400 feet. This cat would never repeat this performance in the day time, and while the professor was trying to make it do so it went away and was not seen again.

The professor then secured another cat, which he considered even more suitable for experimental purposes. She was a female with kittens which were not weaned and had, therefore, the strongest reasons for finding her way home. She was a large and powerful animal and therefore able to make a long journey. Her home was in the immediate vicinity of the professor's house.

She had become such an inveterate hunter of birds and chickens that her owner wished to get rid of her.

Seven times this cat made her way home from points varying from one to three miles away. She was secured in a sack, which completely blindfolded her, carried to the release point in a motor car and placed under a wooden box, which was weighted with stones. The box was raised at the moment of release by a cord pulled from the green observation tent 75 to 100 feet away.

She was given her freedom every time about the same hour in the evening and the box was opened toward the north in every experiment except No. 4, in which the opening was to the east.

The professor wished to ascertain: (1) Whether the cat would continue to return to her home and kittens when taken to

varying distances beyond her known or probable range, (2) whether under such conditions she would orient—that is, turn toward her home—immediately and correctly, (3) whether after making the correct orientation she would strike off in a direct line for her home and pursue that course, or whether she would be mainly concerned with cover and safety first.

In the first four experiments on this cat she jumped from under the box as if in response to an electric shock. In every case she turned immediately toward her home and started to move in that direction. In one instance, No. 5, she not only started but continued at a rapid pace toward home until lost to view. It was thus known that there was no back-tracking over the course that was followed by the automobile in bringing her out.

In the first test the cat sprang out of the box, came to attention, as it were, for a moment and faced in the direction of her home, which lay a few points north of east. She moved slowly for a short distance on this course, meowing almost continually, then turned over to the north and after going a few rods suddenly veered and made for cover in a piece of woods. It was seen that she had turned away as a farmer's boy appeared on the scene with two dogs. She outdistanced them and in a moment was safe in a tree. All the observers knew about her subsequent movements is that by six o'clock next morning she was home again with her kittens.

In the second experiment she was taken on June 9 over a course of two miles due

west. The tent was placed in a corn field 150 feet from the highway, along which automobiles and pedestrians were liable to pass. The box was opened from the north and the cat when free could move in any direction except south without passing the tent, her home course being a point or so north of east.

At the moment of her release she faced home perfectly and began moving in the right direction, but as in previous cases she soon swerved to the north. At that moment two men coming down the street stopped and made a movement as if to approach the tent. After travelling northward for about a rod the cat stopped, cocked her ears, glanced back at the tent, struck the home course and began moving rapidly up the hillside. She was following a straight line home when last in view. She probably made home very quickly, but was not seen again until the following morning.

The last two experiments, Nos. 6 and 7, were undertaken mainly as a check on the first experiment. Another experiment was of an entirely different character. The cat was put under complete anaesthesia by chloroform and conveyed by motor car one and a half miles east by north of its home site. Toward the end of the journey she recovered from the anaesthesia so as to be able to take care of herself when let out of the box. She was set free in a field 50 feet from the highway. She made at once for that road in a direction opposite from that of her home and would have gone beyond it but for a gorge which blocked her path.

Then she moved beside the road, very nearly back-tracking over the course that the automobile took for several rods and disappeared in the cover of bushes. She returned home only after an interval of sixty to seventy hours, that is to say, that the distance which she ordinarily covered in the course of a night now required eight times as long. It appears that the anaesthetic had put the homing mechanism of the cat out of action and that she found her way home simply by wandering.

In studying investigations by other scientists concerning the homing powers of the cat, Professor Herrick quotes some statements of J. H. Fabre, the famous French naturalist. The French author says that in going from Orange to Serignan, a distance of four and three-eighths miles, his oldest cat was confined in a basket, and upon arrival it was kept a prisoner for a week in the hope that it would become used to its new home. This was all to no purpose, for upon regaining its freedom it returned at once to Orange. When found at its former home the animal was wet to the skin and its body smeared with red earth, an evidence that it crossed the River Aigues and afterward gathered up the dust of the fields, as there was no mud away from the river. Two bridges crossed the river, one at a point above and the other below the course the cat must have followed, but it used neither bridge. Its instinct directed it home by the shortest course, and it overcame its repugnance for water to reach its beloved abode.

Photograph of the Cat Used by Prof. Herrick in the Interesting Experiments Which Have at Last Explained to Us Why the Cat Comes Back

A Carrier Pigeon With a Camera, Used During the War. The Carrier Pigeon's Power to Return Home Over Long Distances Is Due to the Same Mysterious Sense the Cat Possesses.